

HIGH RATE FILTRATION SYSTEM

ABSTRACT

A high rate, upflow filtration system is described in which a compressible, fibrous lump filtration media is compressed to adjust the porosity and collector size of the media in the bed and to provide a porosity gradient within the bed proceeding from more porous to less porous in a direction opposite to the flow of fluid so that filtration proceeds in a direction from a more porous to a less porous filter bed. Larger particles are removed by the more porous media and successively smaller particles are removed as the filter bed becomes less porous. The system is capable of reducing the turbidity of influent municipal wastewater from about 8 NTU to about 2 NTU at a wastewater flow rate of from about 820 to 1230 L/m²•min (20 to 30 gal/ft²•min), at a bed compression ratio of from about 15 to 40 percent, and at a backwash rate of from about 1 to 6 percent based on the total wastewater passing through the filter.

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